

METAL BANK NPL SITE
PHILADELPHIA, PA

MEETING MINUTES
TECHNICAL MEETING ON SHEET PILE
AUGUST 20, 2008

A meeting regarding the technical aspects of the sheet pile installation and potential path forward activities for the Metal Bank Site was conducted on Wednesday August 20, 2008 at the Metal Bank Site located at 7301 Milnor St., Philadelphia, PA.

Attendees:

Field Office

Sharon Fang	U.S. EPA (RPM)
Charles Nicholas	USACE (EPA Oversight)
Dennis Zeveney	USACE
Reuben Wade	USACE
Kevin McKeever	AMEC (Design Engineer of Record)
Joe Tarsavage	AMEC
Don Dotson	AMEC
Joe Vitale	Malcolm Pirnie, Inc. (Project Director, Supervising Engineer)
Wyn Davies	Malcolm Pirnie, Inc.
Steven Langseder	Malcolm Pirnie, Inc.
Bob Helkowski	Malcolm Pirnie, Inc.
Dan Sullivan	TtEC (Remedial Contractor)
Mike Murray	Midlantic Construction (TtEC sub)
Pete Murray	Midlantic Construction (TtEC sub)

Via Teleconference

Ray Lees	Malcolm Pirnie, Inc.
Don Dotson	AMEC

Agenda Items were discussed and agreed upon prior to the meetings, including:

1. Background on Design Purpose of Sheet Pile Wall and Performance Goals
2. Current status of the sheet pile Installation
3. Field installation observations and design conformance
4. Operational and Technical Issues to attain vertical alignment and embedment
5. Understandings regarding comments/responses

Topics Discussed:

1. Background on Design Purpose of Sheet Pile Wall and Performance Goals:

- According to the RODs (1998, 2000, 2001) and Explanation of Significant Differences (ESD 1 and ESD 2), and as summarized in the revised Remedial Design Report Section 3, the purpose of the sheet pile wall was:
 1. Per ESD-1, to contain oversized material containing PCB contamination and prevent migration of PCBs to the Delaware River.
 2. Per ESD-2, to prevent erosion of the fill material into the river, to facilitate the installation of the LNAPL collection system if necessary, and to prevent tidal water run-on into Upland excavations (i.e., SA-4/5) during excessive flooding events (e.g., 50-year or 100-year storm events).

2. Current status of the sheet pile Installation:

- To date a total of 22 pairs have been installed. The first four pairs were installed to -40 elevation datum, and refusal has been encountered prior to design penetration depths at the remaining 18 pairs. Refusal is defined when vertical movement of the sheet is stopped despite continued hammering. Refusal is occurring at the schist and/or weathered schist interface, the geology of which is inherently variable and surfaces which have been approximated based on the PDI borings installed, as presented in Sheet C-41. Specifically, these approximated sections show the schist interface anywhere from -32 to -36 elevation datum in the vicinity of the Zone 3 of the sheet pile wall.
- Deflection has occurred in certain pairs due to continued hammering with the hammer in an attempt to achieve design penetration depth. Certain sheets have been re-set multiple times to make them plumb, and a confirmatory survey was commenced after the seventh pair.
- Pinching of sheets is not occurring. The contractor's experience dictates that pinching is characterized by vibration in adjacent sheets, and this has not been observed. Rather, the vibration has only been observed in the sheet being driven.
- Other observed conditions (noise, sparks) are due to the high energy of the larger hammer and resultant friction losses.
- Sheet pile installation continues at a slower than expected rate [4 pairs per day rather than 8 pairs per day].

3. Field installation observations and design conformance:

- The two functions for the sheet pile were discussed in terms of observed conditions and design conformance:
 1. Erosion Control, LNAPL Migration Prevention, Flooding Control:
 - As currently installed, the wall meets its function for preventing erosion control. An evaluation is necessary to determine if the wall as currently installed will meet the functional needs for preventing LNAPL migration to the Delaware River during SA-4/5 work, and preventing flooding of SA-4/5 from the Delaware River during exceptional storm events.

2. Short-term (during Remedy Construction) and Long-term (post-Remedy Construction) Structural Stability:

- An evaluation is required to determine if the 150 PSF requirement is applicable and may be modified.
- Based on the outcome of the 150 PSF evaluation, the appropriate means and methods may be determined (e.g., low impact land-based equipment behind the wall excavating sediment in the Delaware River).
- Features of Work currently planned during the remedy construction behind the sheet pile wall include: SA-4/5 excavation and backfill, LNAPL collection trench (if necessary), installation of tieback rods and deadmen, backfill and soil cap, seeding and mulching, and installation of chain link fence.
- The intended use of the site has not been determined. The 150 PSF evaluation is necessary to evaluate the maximum bearing loads of the sheet pile after the site is restored to complete the Remedy.

3. Long-term Structural Stability

4. Operational and Technical Issues to attain vertical alignment and embedment

- Plumbness/Deflection: Requirements for plumbness of the wall in the specifications are intended to keep soil from spilling around or through the wall, or is required when used in combination with other marine structure(s), which is not the case for the Metal Bank site. In practice, the structural integrity is not affected by minor deflection in plumbness, and may be simply remedied by shimming the wailers or other commonly accepted techniques.
- Refusal: Structural integrity may be affected by refusal and inability to achieve design penetration depths; however, an evaluation is required to determine the structural integrity of the sheet pile wall as currently installed. Furthermore, if the results of the evaluation indicate that the structural integrity may be compromised, it may be remedied by designing additional support for sheet pile wall.

ACTION ITEMS:

Action Item	Responsibility	Due Date
Send deflection and depths (tip elevations) to the team.	TtEC	August 20, 2008
Send cut sheets for drive hammers to the team.	TtEC	August 20, 2008
Create a FTP site for managing data associated with the sheet wall pile evaluation.	AMEC	August 20, 2008

Send daily logs including observations to Don Dotson of AMEC by posting to their FTP site.	All field personnel from TtEC, MPI, USACE, and EPA.	August 20, 2008
Prepare meeting minutes and distribute to the Team.	MPI	August 21, 2008
Prepare preliminary analysis and evaluation on current conditions of Zone 3.	AMEC	Prior to Don Dotson site visit: August 27, 2008 (tentative)
Schedule site visit by Don Dotson of AMEC.	MPI, AMEC	August 25, 2008
Send installation logs for today thru day before Don Dotson site visit.	TtEC	1 day before Don Dotson site visit: August 26, 2008 (tentative)